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N Max, R Crawfis, C Grant - Visualization, 1994., Visualization'94, Proceedings., IEEE ..., 1994 - ieeexplore.ieee.org

... We continue to **advect** the particle until it reaches a stagnation ... Projections Four techniques were tried for projecting a 3D vector onto the 2D surface. ...

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[3D IBFV: Hardware-Accelerated 3D Flow Visualization - all 5 versions »](#)

A Telea, JJ van Wijk - Proceedings of the 14th IEEE Visualization 2003 (VIS'03), 2003 - portal.acm.org

... 3 3D IBFV To extend 2D IBFV to 3D, three main problems are to be taken care of. First, a way must be found to perform ink advection in 3D. ...

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V Interrante, C Grosch - Computer Graphics and Applications, IEEE, 1998 - ieeexplore.ieee.org

... over an input texture consisting of a sparse set of distributed points 4 —taking care to **advect** the “empty ... 2 A 2D slice from a solid 3D texture generated ...

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D Weiskopf, G Erlebacher, M Hopf, T Ertl - Proceedings of the Vision Modeling and Visualization ..., 2002 - vis.uni-stuttgart.de

... All information concerning the particles is stored in 2D arrays at the corresponding ... Similarly to LIC, we choose to **advect** noise images; four noise arrays N, N ...

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... velocity itself. The basic idea is to **advect** the texture by the flow field. ...

In this paper, we replace the 3D textures by 2D texture ...

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G Toth - Astrophys. Lett. & Comm, 1996 - hermes.elte.hu

 ... The Versatile **Advection** Code is under development, but it has already reached a ... of course, such a code can never do a simulation in 3D, or in 2D with slab ...

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B Jobard, G Erlebacher, MY Hussaini - Proceedings of the conference on Visualization'00, 2000 - portal.acm.org

 ... discuss the hardware implementation of the **advection** component of ... We store a time series of 2D vector fields ... entire physical domain, in two 3D velocity textures ...

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G Labrosse, E Tric, H Khallouf, M Betrouni - Numerical Heat Transfer, Part B: Fundamentals, 1997 - informaworld.com

 ... the v field, being the solution of the (**advection**-Jdiffusion problem ... normal derivative. The 2D configuration corresponds to the ... y = 0 of the 3D flows, which are ...

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 ↑ **ABSTRACT**

In this paper, we present a method for real-time visual simulation of diverse dynamic phenomena using programmable graphics hardware. The simulations we implement use an extension of cellular automata known as the coupled map lattice (CML). CML represents the state of a dynamic system as continuous values on a discrete lattice. In our implementation we store the lattice values in a texture, and use pixel-level programming to implement simple next-state computations on lattice nodes and their neighbors. We apply these computations successively to produce interactive visual simulations of convection, reaction-diffusion, and boiling. We have built an interactive framework for building and experimenting with CML simulations running on graphics hardware, and have integrated them into interactive 3D graphics applications.

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